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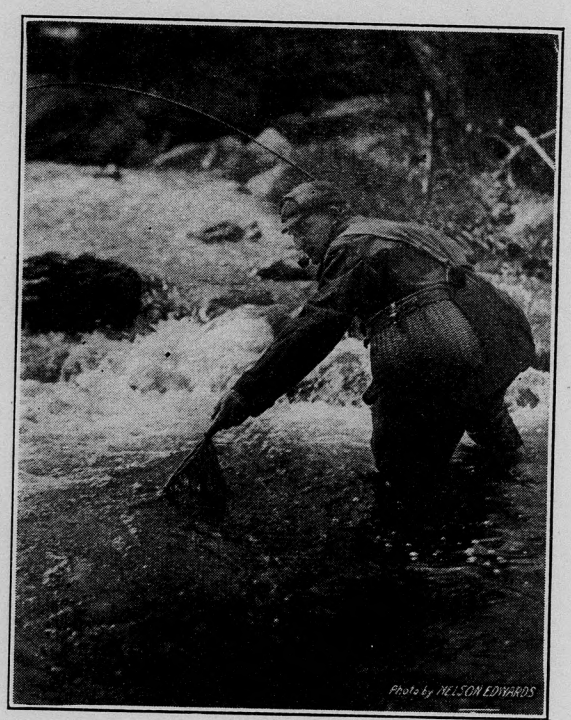
THE TROUT SEASON IN MARYLAND

NEVER IN THE HISTORY of the Conservation Department were the trout streams of Western Maryland better stocked than on April 1 of this year. Anglers from the District of Columbia and Pennsylvania, as well as Maryland, were aware of this fact before the season opened, and in Frederick and Washington counties the number of automobiles parked along the good trout streams on the opening day was evidence of the increasing interest in angling.

Reports reaching the Department on April 2 indicated that the majority of the fishermen had obtained their creel limit before noon on the opening day. Within several days after the opening, however, reports came to the office that many dead trout were seen floating in the streams, particularly in Frederick County. Investigation showed that these fish, which were just under the legal size of seven inches, had been hooked and thrown back into the waters.

The department was very much concerned over the waste caused by throwing these small fish back into the streams, and, after talking with the Superintendent of Fish Hatcheries, A. M. Powell, it was decided that the fish hereafter liberated into the fresh-water streams of the State should be of legal size only. It

would be better for the anglers if fewer fish were put into the streams, but all of legal size, to prevent this mortality another season, and this step will be followed by the department in future stocking of the streams. Sportsmen, on the other hand, must coöperate with the department by taking their creel limit, even if the fish are only seven inches, instead of hooking countless fish and throwing them back in the hopes of getting larger ones. The department realizes that it natural for the fisherman to wish to take home a string of good-sized fish, and he is, in consequence, tempted to release a small fish in the fond hope that he will catch



Into The Net

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An interesting report comes from Washington County, where the fishing has been most successful since the opening of the trout season. Mr. F. L. Bentz, secretary of the Hagerstown Chapter of the Izaak Walton League, says:

"I have been wanting to write you for quite sometime to give you just a little report of the trout season. I think we can truthfully report a much better trout season than ever before. Most

everybody has caught his limit and many large trout have been taken. The writer has seen a number of 17-inch trout and has caught several good-sized ones himself. The trout at the hatchery are doing fine and attracting quite a few people up to see them."

From Frederick County, Mr. S. Edward Shaw, president of the local chapter of the Izaak Walton League, also reports:

"The trout season which opened April 1 was very successful for about 15 days. The worm fishermen crowded our streams at this time, and I daresay that within one week every man who fished by this method succeeded in getting his limit in a very few hours. It was not a pleasure for a fly fisherman to try his luck in these troubled waters.

"A good bit of complaint arose from the fact that a great many of the fishermen did not take the 7-inch trout to which they were entitled, but would return them to the stream and try for larger fish. It was evident from the fish lying on the bottom of the pools that a good many of these fish died. At this time the worm fishermen are not having such very good luck, and throughout the week a fly fisherman can use his fly on portions of the stream without disturbance. The size of fish caught range from 7 to 10 inches. Only in cases where larger fish were liberated were any caught. These, I understand, were from 12 to 16 inches, and only a few of those."

Superintendent of the State Fish Hatcheries Powell states that in his opinion 16,000 trout were taken out of two streams in Frederick County during the first two weeks of the trout season.

While the stream survey of Baltimore County showed but few trout streams of any consequence, several have been found capable of supporting brown trout, and a number of these fish were planted by the State. On Sunday, May 4, a brown trout was taken from Jones Falls in Baltimore County, measuring 16 inches long, and, according to one of the Baltimore anglers, it is surprising to know how many fish have been taken from this stream.

With Baltimore County so accessible to the fishermen of Baltimore City, the department is endeavoring to stock with suitable varieties all the streams that are capable of supporting fish. During the last week in April, through the coöperation of the Izaak Walton League, 500 trout, ranging in size from 7 to 10 inches, were placed in Western Run, which will give some sport to the local fishermen for the balance of the season.

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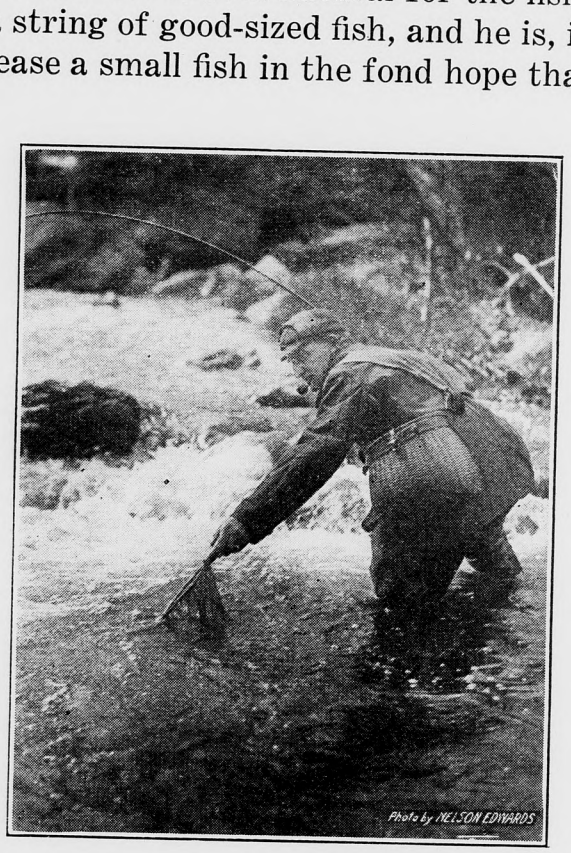

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Reports were also received from Garrett and Allegany Counties, where the trout fishing was not as successful as in Frederick and Washington. In Allegany, of course, the trout streams are rather insignificant, but Garrett has a large number of good streams and should provide plenty of sport. These counties have not been so heavily stocked as Washington and Frederick, but the fish from the department's hatchery at Bear Creek will enable us to increase the supply of trout in the local streams during the next year.

DISTRIBUTION OF YELLOW-PERCH FRY, SPRING, 1930

Choptank River—Denton	24,400,000
Secretary and Cabin Creeks (from Denton)	2,400,000
Rock Hall	122,400,000
Crumpton	45,600,000
Millington	41,120,000
Principio	7,600,000
Aberdeen	21,520,000
Severn Run	362,780,000
	627,820,000

Distribution from Severn Run as follows:

Conowingo Dam	28,400,000
Bush River	3,400,000
Bird River	3,400,000
Back River	3,300,000
Middle River	3,800,000
Gunpowder River	3,600,000
Upper Patuxent River	4,000,000
South River	3,400,000
Rhode River	3,400,000
West River	3,400,000
Magothy River	4,400,000
Marley Creek	2,000,000
Bodkin Creek	600,000
Creek leading to Magothy River	600,000
Rock Creek	2,000,000
Stoney Creek	2,000,000
Bare Creek	3,000,000
Lake Roland	2,000,000
Ellicott City	2,500,000
Allen Fresh Run	4,000,000
St. Catherine's Sound	1,200,000
St. Clement's Bay	1,800,000
Breton Bay	2,000,000
Pocomoke River	5,000,000
Salisbury	4,800,000
Peach Blossom Creek	800,000
Tripp's Creek	1,000,000
Goldsborough Creek	800,000
Island Creek	1,000,000
Dividing Creek	400,000
Boon's Creek	400,000
Severn River	260,380,000

REFUGES

IN A RECENT NEWS bulletin issued by the Wisconsin Conservation Commission there is a very interesting account of the work of that Commission in connection with the establishment of 96 new fish refuges. These refuges are distributed over 21 counties of the state, and there are a total of 216 in operation. Quoting from the article:

"'Fish refuges will prove just as beneficial to fish life as game refuges have for wild game animals and birds', says B. O. Webster, superintendent of fisheries. 'For too long the major emphasis in fish culture has been directed at artificial propagation. We must now protect the fish in their natural habitats and their natural reproduction if we are to do the most good in improving the fishing.'

"Fish refuges are of two kinds—those established for trout, and those for lake fish. In every instance the trout refuges include only the small feeder creeks to trout streams in which the fish spawn, and in which the baby fish stay until they are big enough to venture out into the main stream.

"During the open season for trout it is seldom indeed that a large fish gets into one of these small feeders, and so closing them to fishing should not cut down on the number of trout fishing places in the state at all. Trout refuges continue in effect throughout the year.

"The lake refuges are always established on known spawning grounds of lake fish. They are primarily for bass, and extend in effect each year only through June 30."

The Conservation Department has established in Maryland nurseries and rearing ponds in Washington, Frederick, and Garrett Counties. These nurseries, however, require the department to continuously feed the fish until they are turned out into the public streams. Through the establishment of fish refuges, which may be very limited in number, the department would be able to raise fish to legal size with less cost than at present. The only difficulty in connection with this plan is that natural food in the average stream is rather scarce and the fish therefore grow more slowly than when artificially fed, but the department is interested in this move of Wisconsin's, and it is anticipated that some streams in Western Maryland may be utilized for refuges during the coming year.

CRAB PROSPECTS

THE CRAB SEASON in Chesapeake Bay and all Maryland tributaries was officially open on May 1. It is unusual at the beginning of the season to have boats ready to start taking hard crabs by trot lines, but, this year, crabs being so plentiful in the upper Bay waters, a number of crabbers started out at once, and the department is making ready to see that the laws are properly enforced.

The soft-crab industry, which is centered at Crisfield, promises an unusual season. The peeler crabs are taken on the grassy bottoms of Tangier Sound and lower Dorchester County, and are placed in floats, in connection with the packing-houses, until they shed out and become soft crabs. These floats, which accommodate from 20 to 40 dozen crabs, have to be fished several times during each 24 hours, in order that the soft crabs may be taken out at once and placed in grass, otherwise they would become papershell or buckram crabs, which are illegal to market. When a soft crab is once taken from the waters it will remain soft when properly packed and iced for shipment, even to the West Coast. Last year, according to reports of this department, 67,026,722 crabs were caught and shipped by crab packing-houses in the State. This showed an increase of 25% over the previous year.

The department, from the present indications in the Bay waters, looks for a much larger supply of crabs in 1930. The general public must be advised that the market is not controlled by the department, but by the demand and supply. Soft crabs last year in Baltimore markets were sold as low as 75 cents a dozen during the early part of the season, but later in the summer, due to the disappearance of grass near the shores where the crabs usually shed, crabs shed in deeper waters and could not be located by the crabbers, hence the prices of soft crabs were much higher than they should have been. Hard crabs and crab meat last year were sold at a reasonable figure all season.

Week-end tourists visiting Maryland waterfront resorts last year were attracted by the quantity of crabs, and hardly a car left the State, after spending a week-end here, that did not carry a bountiful supply of crabs. The department was obliged to put on special inspectors in many localities to see that the laws were observed, as strangers are not familiar with our cull laws and did not use discretion in bagging their catch. It would be

very difficult to estimate how many crabs leave the State through this source, but at some of the popular resorts on both the eastern and western shores from 200 to 500 cars are a not uncommon sight on Sunday, and, with wider publicity on the Bay, we may count on many more visitors during the coming season.

Reports from the inspectors in Tangier Sound show a greater quantity of small crabs ranging in size from a ten-cent piece to two and a half inches than for a number of years.

The first report to reach the Conservation Commissioner after the official opening of the crab season on May 1 in Chesapeake Bay and tributaries is from the Great Choptank River, one of the centers of the hard-crab industry, and in the report of Deputy Commander W. J. Haddaway, he states:

"At the start of the crab season we find the creeks literally filled with crabs. We find the largest part of them undersized, however. The largest catch we are able to report is two barrels, the run is from one to two barrels. I am quite sure I have at no time seen so many crabs at the first of the season. This report applies to Broad and Harris Creeks. We find the greater part of these crabs will run around four inches and a great many just a little under the lawful size. I do not look for much change till after they slough the first time. This should occur around the middle of May, probably a few days before. They are fat and a great many are near the peeler stage."

CONCERNING THE OYSTER BLIGHT IN VIRGINIA

By Dr. R. V. TRUITT

THE OYSTER SITUATION in Virginia during the past few months has developed a very serious aspect, due to an extraordinary high mortality. Many hundreds of thousands of bushels of oysters have been destroyed, and the agency at work is spread over a wide territory, though decidedly the most intensive losses have been experienced in the York River and Mobjack Bay. On some beds the mortality has reached 100%, and quite commonly 80% of the oysters have succumbed. In a few cases the death rate was lower, though on only three beds examined, during a three-day survey on the York and Mobjack, was the destruction negligible.

In connection with the loss of oysters in Virginia it is interesting to note that the troubles involved both recently planted

and older oysters. Also, it is noteworthy that closely related animals, clams, mussels, etc., in fact the general biota of the region, were not disturbed to an appreciable extent. Furthermore, the oysters on the natural bars, though badly sponge bored, showed very little trace of the "bill-sloughing" disorders so characteristic of the troubles on planted beds. While there are few highly productive natural bars in the region in question, access was had to "natural growth" over a wide territory, both from our own dredgings and from clam tongers. We found only one indication of "bill-sloughing" disorders on natural bars, though many rumors were heard to the contrary. Of further interest, too, is the fact that on planted beds seed from both Virginia and North Carolina were affected. Local oystermen feel that the Carolina seed were more greatly injured than those from the James River. Our own observations did not confirm this opinion. Rather, it seemed that the extent of destruction can be correlated with areas or particular localities.

Very little study has been directed toward mortality in oysters; thus there is little available information on the subject. For the most part, such studies as have been carried on have been concerned with pollution, freshets, or other physical features of the waters, while the biological side, disease in particular, has remained almost untouched. Our interest in the Virginia situation arose out of the fact that not only is the same species of oyster found in our waters but many thousands of bushels of seed oysters are brought into Maryland from the very beds which produced the oysters now suffering high mortality in the Old Dominion. With virtually identical biological and, in a large measure, physical conditions, we may be confronted with exactly the same situation; thus we hoped to be acquainted with the facts in the case and, if possible, to contribute to a better understanding of the conditions that obtain. However, our own studies, like those conducted through other channels, were not sufficiently extensive or complete to justify conclusion, though some interesting observations were made.

One conclusive observation we were able to make was that the "slough-bill" disorder is distinctly a Virginia problem. Two shipments of seed oysters planted in New Jersey, though the seed came from the same areas which supplied the seed which suffered great mortality in Virginia, disclosed no loss. Several thousands of bushels of seed taken from the same regions which supplied the York and the Mobjack and planted in Maryland, both Chesapeake and seaside, show no trace of the disorder.

Experimentally, five James River plantings were made on diverse areas in Maryland's Chesapeake during the fall of 1929 in an effort to ascertain the adaptability to local conditions in a commercial way. To the same end, eight plantings of North Carolina seed were made, and these, in common with the large private plantings in Worcester County, show no trace of disorder. Quite to the contrary, the seed planted during the past year, from both Carolina and Virginia, are at present in an excellent state, thrifty and very promising. Up until this time, at least, the troubles experienced in the lower Bay seem very distinctly to be confined to Virginia.

From available records it is not possible to tell just when the highly destructive forces were at their worst. It is apparent that in the York and Mobjack, places observed more in detail by us, the oysters have been dying for some time. According to oystermen of the vicinities in question the oysters seemed a bit weak as far back as last Christmas. Most of the owners and operators feel that the greatest damage was done in February and early March. At the time of our inspection (third week in April) the disturbing forces had about spent themselves, though the way in which the oysters were affected was plainly visible still. A sloughing started along the outer edge of the upper shell and continued until all of the "paper-bill" was lost. After this the oyster made repeated efforts to restore the "paper" edge but seemed able to accomplish nothing more than the deposition of lime (shell) which thickened the edges. In the meantime the upper shell had become much shorter than the lower one, though the latter had experienced little or no growth. Such a condition of itself worked ill for the oyster, since it tended to hook sediment into the cavity of the shells and around the soft body of the oyster. That this was true was plainly to be seen in practically every oyster affected, for such forms had laid down vast deposits of lime, as "blisters", in their efforts to cover over debris which had entered and could not be expelled normally. In many cases the entire surface of the lower valve was covered over by such a deposit laid down on fine sediment or even sand particles. This was followed by a poor, watery condition in the oyster itself.

At the time these observations were made the temperature and salt content of the waters involved were normal, and there was no other untoward physical condition indicated by the hydrogen-ion concentration or the presence of free or ionized metals. In other words, at present there is no trace of pollution. Cultures made from the bodies of affected oysters, up to this time at least, have shown no unusual bacteriological organisms. There was no indication of flat or round worm parasites. Of the several 50-gallon samples of water examined to date the plankton, which is in part the food of oysters, discloses no abnormality. What these factors, now normal, were at the peak

of destruction can not be known, unfortunately. It seems just now that the source of the troubles in Virginia will be very difficult to determine, though with considerable attention directed toward the disorders there, as indicated by the action of the United States Bureau of Fisheries and the authorities of the state, data will be accumulated which may offer a better understanding should there be a recurrence of the present situation anywhere in the habitat of the oyster.

A number of interesting and practical questions arose out of the Virginia problem, the foremost of which, apart from the disease possibilities, is: Will transplanting the affected oysters reduce mortality? In two out of three beds so transplanted and observed by us it was noted that the death rate was reduced, and in one of these cases greatly reduced—from 80% to 20%. In the third case cited the mortality was very high, though the owner felt that he delayed too long in transplanting. Further inquiry may throw light on this subject. Another question that presented itself was that concerned with constant use of oyster ground. In many cases those experiencing high mortality were using bottoms that had been repeatedly used without "rest". The significance of this is nullified somewhat by the fact that some mortality was experienced on fallow grounds, and in one such case a very high death rate was experienced. A check-up later on may definitely add information on this subject. It is a well-established fact, however, that constant use of bottoms for planting purposes in certain regions is fatal. Experience on Sinepuxent Bay, in Maryland, illustrates this point clearly.

It is not the belief of those who made the observations set forth here that the particular trouble in Virginia is new to the oyster industry, though local interests claim that nothing like it has ever been seen there before. On the more shifting bottoms of Chincoteague and Sinepuxent Bays, a condition very markedly like that now being experienced in Virginia is not uncommon, though, apparently, because the beds are broken and their construction (texture) more variable, high mortality usually runs in streaks through beds and rarely involves whole beds. The shells of the oysters destroyed appear, in color at least, unwholesomely mud-beaten and exposed, and as though they had been exposed to a sulphide. Occasionally in Ready's Cove and on the Little Door flats, Worcester County, oysters are found in great numbers which have begun to develop a "slough-shell" condition. Their owners, when they observe this condition, transplant—sometimes with complete success. Oystermen thereabout feel that such oysters are injured from overcrowding; however, their observations cannot always be borne out by the facts of the case. It is the hope of the Conservation Department that further observations may be made of the Worcester County conditions so that comparisons can be made with the recent records taken in Virginia, in order, possibly, to throw some light on a bad situation, one that may or may not become a big problem in this State.

LOWER CHESAPEAKE BAY STUDIES TO BE CONTINUED

A study of the early development of food fishes in the lower Chesapeake Bay is to be continued during the coming spring and summer by John C. Pearson, who is attached to the staff of the North and Middle Atlantic fishery investigators under the general supervision of O. E. Sette at Cambridge, Mass. Mr. Pearson spent several days in Washington, obtaining supplies and equipment, en route from a four-month detail at Peabody Museum of Natural History of Yale University, where he has been engaged in a study of material collected in the lower Chesapeake during the summer of 1929. He reports that a preliminary examination of this collection of the fish eggs, larvæ, and juvenile fishes was completed while at Yale.

The principal object of the investigation was to locate the spawning grounds of the squeteague, or gray trout, and to trace the dispersion and rate of growth of the young. It was found that the main Chesapeake Bay spawning area for the species was an extended shoal lying slightly offshore between Cape Henry and Cape Charles. The spawning gray trout congregated on this shoal during May, June, and part of July, and the eggs and young resulting from the spawning were found to be most abundant on the shoal itself and decreasingly abundant as the distance from the shoal increased.

Field collections were made five days a week from May to October, 1929. Nearly 300 tow-net hauls were made, and the majority of these hauls contained eggs and larval fish. Some 43 species of larval and postlarval fish were secured. A series of the young of the squeteague or gray trout, the harvest-fish, and the butter-fish was taken. Other species will be studied and gaps in the observations filled in during the coming season.—*U. S. Bureau of Fisheries.*

SHELL-PLANTING RESULTS

With the 1930 shell-planting operations already in progress, it is interesting to note the results obtained on last year's plantings in several localities of the State.

From Deputy Commander E. J. Plowden, of the power-boat Potomac, comes the report that on shells planted last year at Blue Sow bar, at the mouth of Breton's Bay, and Old Wreck bar, at the mouth of St. Clement's Bay, there is a quite remarkable catch of small oysters, running about 800 to the bushel.

Captain Herman A. Woodfield, member of the department's advisory committee for the Third District, reports that the shells planted on Holland Point, Anne Arundel County Bay shore have the best catch of any shells planted by the department since this work was undertaken. At least 90% of the shells have from two to six oysters on them.

Catches in a number of other districts have been equally fortunate, and the department is satisfied that shell planting will soon show its effect in the annual production of oysters.

STAKE-NET FISHING REGULATIONS

Following arguments on behalf of Chesapeake Bay fishermen by Congressman T. Alan Goldsborough, representing the nine Eastern Shore Counties, and State Senator S. Scott Beck, of Kent County, a conference of 250 fishermen of Rock Hall and War Department officials came to an agreement on stake-net fishing in the Bay. The session followed action by the War Department for removal of nets under the law prohibiting their use at a depth greater than 25 feet. It was brought out at the meeting that Rock Hall watermen had stretched a line of nets almost across the Bay, thus menacing navigation and preventing fish from proceeding farther north. Last week the War Department ordered nets removed from outside the 25-foot limit, and fishermen protested that the ground was legally their own. The compromise will, it is believed, apply to fishermen generally along the Eastern Shore water front of the Chesapeake Bay.—*Crisfield Times.*

HERRING AND SHAD

Up to the first week in May, the run of shad in Maryland waters has been light. In some localities the pound-netters have had fair catches, but the heavy run usually experienced during May has not reached Maryland waters. The U. S. Bureau of Fisheries station on Potomac River reports poor results to date.

The run of herring this season has been very heavy, unusually so in fact, and reports from the Great Choptank River are to the effect that the peak of the run occurred in the latter part of April, when as many as 400,000 were cut in one packing-house in a single day. The packers state that the fish were of excellent size and the season was a satisfactory one in every way.

FISH GLUT IN BALTIMORE MARKET

Fish of nearly all kinds were exceedingly plentiful in the Baltimore Fish Market during the first week in May. Hardheads were particularly abundant and were selling at 2 cents a pound, herring brought $1.50 a barrel. Split shad were selling at 15 cents and 20 cents apiece. On May 8 a truck-load of 5,000 pounds of hardheads came in, and, on account of the unseasonable heat which prevailed at that time, quantities of fish spoiled and had to be carried away. Soft crabs were also fairly abundant and of good size, prices ranging from $1.00 to $1.25 a dozen.

GARRETT COUNTIAN HOOKS BIG TROUT

Probably the largest trout hooked in Maryland during the current season, which began on April 1, is the 23-inch rainbow captured by a Garrett County fisherman in Deep Creek Lake recently. The fish weighed over five pounds.